

NESTAR NEWS

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Nestar Systems, Incorporated

Corporate Background Information

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INTRODUCTION

Decreases in the cost and size of integrated circuit technology led to the development of the microcomputer. Its immense popularity is due, in part, to putting inexpensive and immediate local computer power into the hands of individual users. Today, microcomputers have become an essential tool in the business world and have found their way into many organizations in large numbers. Most low-cost, microcomputer-based business systems operate in a single-user or "stand-alone-mode", and do not communicate with other systems. Business, manufacturing and research operations, however, depend upon communication and the use of shared data, so the need to link individual computers becomes a necessity.

Suddenly, the burgeoning market for microcomputers (i.e. desktop, personal computers) has become a billion dollar market for sophisticated communications and data management hardware and software. Spurring this revolution in computer communications is the technology of local area networking. Leading the field of low-cost, user-friendly, interconnected personal computers is Nestar Systems. Nestar just three years ago saw the enormous potential of personal computers for professional applications - a potential far beyond their popularity at the time. From its inception, Nestar has viewed personal computers as a serious computing tool, having an immense impact on the information processing world. It was also perceived that in order to perform as a fully bonafide computing tool, personal computers would have

to be linked together for the purposes of sharing data and leveraging the cost of high-quality peripherals such as large-capacity disk drives, high-speed printers and communication equipment. Nestar's mission is to provide low-cost, distributed computing systems built upon personal computers and interconnected via local networks having remote communications capabilities.

Nestar's CLUSTER/ONE ® locally-networked computing system provides the vehicle for sharing data and resources among multiple users of Apple computers. Based on its ClusterNet (tm) technology, Nestar's CLUSTER/ONE systems have been adopted by a number of Fortune 500 companies and top financial and public sector organizations for a variety of applications. Nestar Systems has gained the reputation as a solid, innovative leader in the rapidly growing field of locally-networked distributed processing systems.

HISTORY

In 1977, while a project leader at IBM's Santa Teresa Laboratory in San Jose, California, Dr. Harry Saal watched as the "home computer" evolved into a powerful and widely-accepted computing tool. He closely followed the technical evolution of microcomputers, and as these machines became increasingly versatile, sophisticated, and inexpensive, he saw an exciting opportunity for computer professionals. He recognized the distributed computational capabilities of these new machines and

believed they represented the wave of the future in business and education.

One of Saal's earliest decisions was to dedicate his efforts to developing the essential missing elements of a low-cost, fully-distributed computing system. He believed that popularly available personal computers, such as the Apple®, TRS-80® and PET ® were more than adequate as low-cost, familiar, workstations. The missing link, he determined, was local networking technology. As a computer professional himself with years of experience in large, multi-user systems and interactive programming, he appreciated the complexity of building a local network that would serve practical computing needs. The challenge intrigued him. In 1978, Saal, together with three other highly-skilled individuals, developed a system based upon an Ethernet-like architecture. As a result of this effort, Nestar Systems was founded. The company was incorporated in the State of California in October, 1978.

With the completion of its first generation CLUSTER/ONE (Model One) network in 1979, Nestar began to grow. Relocating twice to larger facilities, the company has tripled sales each year. In January 1980, Nestar introduced the second generation of the CLUSTER/ONE (Model A for Apples) built around the Apple personal computer.

In July 1980, a financial agreement was completed with Zynar Limited of London, a subsidiary of the multi-national Rank Organization of England. In addition to financial ties between

the two companies, Zynar and Nestar agreed to engage in joint development of hardware and software microcomputer products.

In March 1982, Nestar and Zynar completed a \$2.5M second round of financing for the purpose of providing working capital to finance the growth of the company. This funding agreement underscores the confidence and successful cooperation that exists between the two companies.

At the start of 1982, Nestar had over 50 people in the design, development, manufacture and marketing of its line of locally-networked products. It is expanding staff at the same rate as sales. Nestar's CLUSTER/ONE products are sold in over 42 countries around the world.

MARKET OVERVIEW

Personal computer sales in the commercial, industrial and public sectors are expanding rapidly. The most important applications, however, will necessitate many of these small computers to be linked to remote mainframes, to minicomputers and to other workstations, in order to communicate with each other and to share advanced peripherals. The market for desktop systems in the \$1000 to \$5000 range is growing at a 200 to 300 percent annual rate. This market is expected to continue its explosive growth for at least the next five years with one of the fastest growth segments being professional and data entry applications in large companies.

Marketing analysts predict that there will be close to four

million personal computer workstations worldwide by 1985. Of these estimated personal computer sales, Nestar expects a significant number will be targeted for networks, since networking gives personal computers a big-system capability at dramatically lower cost than traditional mainframe and minicomputer systems.

Manufacturers and software houses that support computers in the \$1000 to \$5000 range generally offer products for single-user configurations. Multiuser systems, based on linking large capacity, high performance peripherals to personal computer workstations, open up a range of applications previously not practical.

This potential market for multiuser systems remains largely untapped. Key to the development of this market is applications software. Currently, most personal computer-based software is designed for the single-user with limited data requirements. Large corporate users of personal computers need software capable of handling large collections of data and capable of sharing that data among multiple users, or exchanging it with a host computer. Nestar is one of the few companies offering professional quality products for this marketplace.

The CLUSTER/ONE family is a multiuser system designed to provide integrated distributed computing systems for the non-consumer marketplace. These systems are composed of clusters of personal computer workstations, which communicate directly through Nestar's ClusterNet local area network. The local area

network provides users access to a series of shared resources - typically large-capacity disk drives, high-quality printers, and shared communications lines.

Single or multiple networks are interconnected to large computer systems or to other CLUSTER/ONE users via Nestar communications servers. Connections to remote sites, regardless of geographical location, are provided by use of a modem and standard telephone lines. Nestar's system hardware and software environment is supported by a rich set of fully integrated, network oriented, end user application programs. Nestar provides a base level technology suitable for supporting end-user developed, specialized applications as well. A typical system, composed of from 4 to 20 stations (including the workstations), costs in the range of \$20K to \$100K depending on the amount of hard disk storage, back-up facilities and other system features.

Nestar's CLUSTER/ONE system has been proven in the field for over two years: the network's reliability, market presence, and reputation are firmly established. Nestar's network products are distinguished from its competitors by its total software and hardware integration. No other network offers comparable software and hardware facilities for the price, placing the CLUSTER/ONE product in a worldwide marketplace by itself.

MARKETING, SALES AND SERVICE

CLUSTER/ONE products are sold in the United States through highly qualified retail dealers, OEM/Systems houses, and direct sales organizations.

OEM sales are pursued to create industry applications oriented systems. Nestar places particular emphasis on developing or having others develop turnkey systems that require no programming skills by the end-user.

Outside the U.S., markets are handled by distributors in 42 countries, located in the Middle East, the Far East, Latin America, Canada, Australia, New Zealand, and Europe. Zynar Limited of England, which shares in Nestar's financial, technical and business development, distributes CLUSTER/ONE products throughout Europe on an exclusive basis.

Service is provided by the selling organization, backed up by Nestar headquarters and Nestar regional offices.

PRODUCTS

Nestar offers a complete, distributed computing system built around off-the-shelf personal computers. Consisting of an integrated set of hardware and software, Nestar's CLUSTER/ONE products are based upon ClusterNet (tm), a local area network which links up to 65 personal computer workstations. Ethernet-like in design, ClusterNet offers users a close working relationship with their own desktop workstation, with other users, and with shared peripherals. Virtually any topology may be

used to suit an individual user's environment (star, ring, tree, bus or daisy-chain).

A flexible, modular design and broad range of "server" (community service) functions permit users to begin small and later integrate additional hardware and software into the network.

Almost unlimited hard disk storage capacity, shared high-speed, high quality printer support, internetworking locally or around the world, and connections to remote mainframes are all available in an online, interactive environment.

WORKSTATIONS

The CLUSTER/ONE network presently supports Apple II and Apple III computers as intelligent workstations. Peripherals can be connected locally in a non-shared, private-use mode without interfering with Network Operations. A selection of operating systems (Apple DOS (tm), Apple SOS (tm), UCSD Pascal (tm), and CP/M®) may be chosen by each user. Within each operating system, a large selection of high-level languages and application programs are offered.

Workstations are connected to the network via the ClusterNet interface card. This intelligent connection provides reliable, error corrected communications protocols for data transmission between any pair of stations on a common bus.

NESTAR HARDWARE

Nestor offers a range of mass storage (disk) products for the CLUSTER/ONE network, including a 1.25 MB floppy disk subsystem, and 16.5, 33, 66 and 132 MB 14" Winchester hard disk drives. Each network can accommodate multiple hard disks.

A high-speed tape cartridge back-up subsystem stores up to 20M bytes per tape cartridge. A 16.5 MB volume can be stored in less than 10 minutes. This offers an efficient, reliable, and manageable back-up solution.

Nestor's Clock/Calendar Card option, which includes both hardware and software, works in conjunction with the network file management program. Datestamping of all data entries to system communications between users is provided automatically to all stations on the network.

Network Interface Cards are plug-compatible with Apple II and Apple III computers, and provide the intelligent hardware connection to the network. One interface card is required for each user station and each server station. It allows transmissions on the network at the rate of 240,000 bps, with all transmissions fully error-checked.

NESTAR SYSTEM SOFTWARE

Network File Server: This network file management program manages up to two Nestor hard disks plus one floppy disk. Multiple file servers are supported on a single network. The Network File Server program supports user workstations running

DOS (3.2.1 and 3.3), Pascal 1.1, CP/M 2.2 and SOS 1.1.

Network Print Server: Through the print server program, all users can share common printer facilities. The network accommodates multiple print servers with up to six printers per server. Local printers can continue to be operated at any given workstation without interference with the networked printers.

File Transfer Server: Nestar's distributed system design allows user workstations to do interactive processing and to accumulate data which can be transmitted immediately or at some future time to another Nestar network or workstation, either locally or at a remote site.

Gateway Servers: The Nestar network, through these server options, can support the IBM 2780, 3780 and 3270 bisync protocols as well as the ASCII start/stop protocol.

Tape Back-Up Utilities: This set of programs, which are provided with the tape cartridge back-up subsystem and work in conjunction with the Network File Server, allow the network to dump (or restore) either an entire hard disk or selected files based upon user requests.

NESTAR APPLICATIONS PROGRAMS

In addition to readily available Apple and CP/M software that can be used locally at individual workstations, Nestar provides program products which have been fully integrated into the network environment, allowing users to take advantage of the data sharing, storage, printing and file transfer capabilities of

the Cluster/One network. Several of these integrated software products are: The MESSENGER - an electronic mail and message system, DB Master (tm) - a database management system, and Visicalc® - an electronic spreadsheet.

RESEARCH AND DEVELOPMENT

From Nestar's inception, its main focus has been to provide computing systems which are: accessible, cost-effective, personalized, user-oriented, and professional. This commitment continues to be the underlying principle of Nestar's research and development program. Nestar is committed to exploring and implementing new "styles" of computing which incorporate new technologies as they are developed. Local area networking is Nestar's current approach to providing state of the art solutions to computing needs.

Nestar supplies its customers with comprehensive and integrated system solutions rather than simply providing network components. Nestar's R & D efforts are, therefore, in both hardware and software, with heavy emphasis on systems capabilities.

As much as possible, Nestar incorporates off-the-shelf components within its systems - from workstations to operating systems to applications software. This allows design efforts to be focused on the network-related challenges of systems design.

FACILITIES AND PRODUCTION

Nestar expanded into its own facility in Palo Alto, California in January 1980. Situated in the northern end of "Silicon Valley", the company's headquarters are close to manufacturing supply sources and in touch with the industry's most recent technological advances. Currently, all operations are centralized in the Palo Alto facility, with further significant expansions planned during 1982.

Nestar's production, assembly and test, quality assurance, and manufacturing engineering emphasize quality and reliability, rather than short-term price reduction. Inspection and testing is performed on all incoming components. These components are then assembled, tested again and inspected by quality assurance personnel before shipping. Assembly lead-time is kept below five days. A comprehensive on-line information management system controls orders, inventory, and materials, so that Nestar's products are delivered as quickly as possible.

KEY PERSONNEL

President

Dr. Harry J. Saal, founder and president of Nestar Systems, Inc. has been involved with computer systems design and implementation for over twelve years. He has held faculty positions in Computer Science at Stanford University, the State University of New York, and prior to founding Nestar, was a project leader in the General Products Division of IBM's Santa Teresa Laboratory.

Vice President, Research and Development

Dr. Leonard J. Shustek manages both computer system hardware and software activities at Nestar. Educated at Stanford University, Dr. Shustek was a faculty member in the Computer Science Department of Carnegie-Mellon University. His specialty is the design and evaluation of computer systems architecture. He is one of the founders of Nestar.

Vice President, Marketing

Peter L. Hertan is responsible for all marketing, sales and support on a world-wide basis. He joined Nestar in October 1980 following eighteen years in development, sales and marketing at IBM. He attended MIT and has a degree in Electrical Engineering.

Vice President, Finance and Administration

S. Kent Foster joined Nestar Systems in October 1980, bringing with him a wide range of experience in financial planning for high-growth, high-technology companies. He manages all financial, contractual and personnel functions for Nestar. He completed his MBA in 1977 and participated in the Stanford Graduate School of Business executive program.

Vice President, Operations

Dan M. Khanna joined Nestar Systems in May, 1981. His responsibilities include production, quality assurance, manufacturing engineering and purchasing. Mr. Khanna, who has a background in finance, MIS, and manufacturing, received his B.S. degree in Industrial Engineering from the California Polytechnic Institute and an MBA from the University of Santa Clara.

Director, Future Products

Dr. Edward P. Stritter completed his graduate studies in Computer Science at Stanford University. Following his graduation, he joined Motorola Semiconductor Group in Austin, Texas where he served as chief architect for the MC68000 microprocessor and was responsible for implementing the MC68000 Pascal compiler. He joined Nestar in November 1979 and has been responsible for the design and development of future microcomputer-based products.

Mr. Colin Crook, Managing Director, Zynar Limited
and Director, Nestar

Systems

Mr. Crook, in June 1980, launched the newest subsidiary of The Rank Organization, Zynar Limited, a venture company involved in developing new opportunities in silicon systems technology. He studied at the Liverpool Polytechnic Institute where he received his degree in Electrical Engineering. In 1973, he joined Motorola's Semiconductor Group, holding various positions within that company. He was responsible for Motorola's microprocessor component development, including the MC6800 and MC68000.

Dr. Federico Faggin, Director, Nestar Systems

Dr. Faggin was a founder of Zilog, Inc. and served as its president for six years. Prior to forming Zilog, Dr. Faggin was responsible for the development of the first microcomputer component family and the original MOS silicon gate process technology.

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